

## Supplementary Materials

# Visible Light Photocatalytic Degradation Performance of Metal (Fe, Ce, Ni, Mn, Bi)-Doped Sodium Tantalite Perovskite

Aijun Huang <sup>1</sup>, Haijuan Zhan <sup>1,\*</sup>, Meng Wen <sup>1</sup>, Yao Zhou <sup>1</sup>, Shuxian Bi <sup>1</sup>, Wanyi Liu <sup>1</sup> and Feng Li <sup>2,\*</sup>

<sup>1</sup> State Key Laboratory of High-Efficiency Utilization of Coal and Green Chemical Engineering, National Demonstration Center for Experimental Chemistry Education, College of Chemistry and Chemical Engineering, Ningxia University, Yinchuan 750021, China

<sup>2</sup> State Key Laboratory of Coal Conversion, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China

\* Correspondence: drzhj1225@126.com (H.Z.); lifeng2729@sxicc.ac.cn (F.L.)

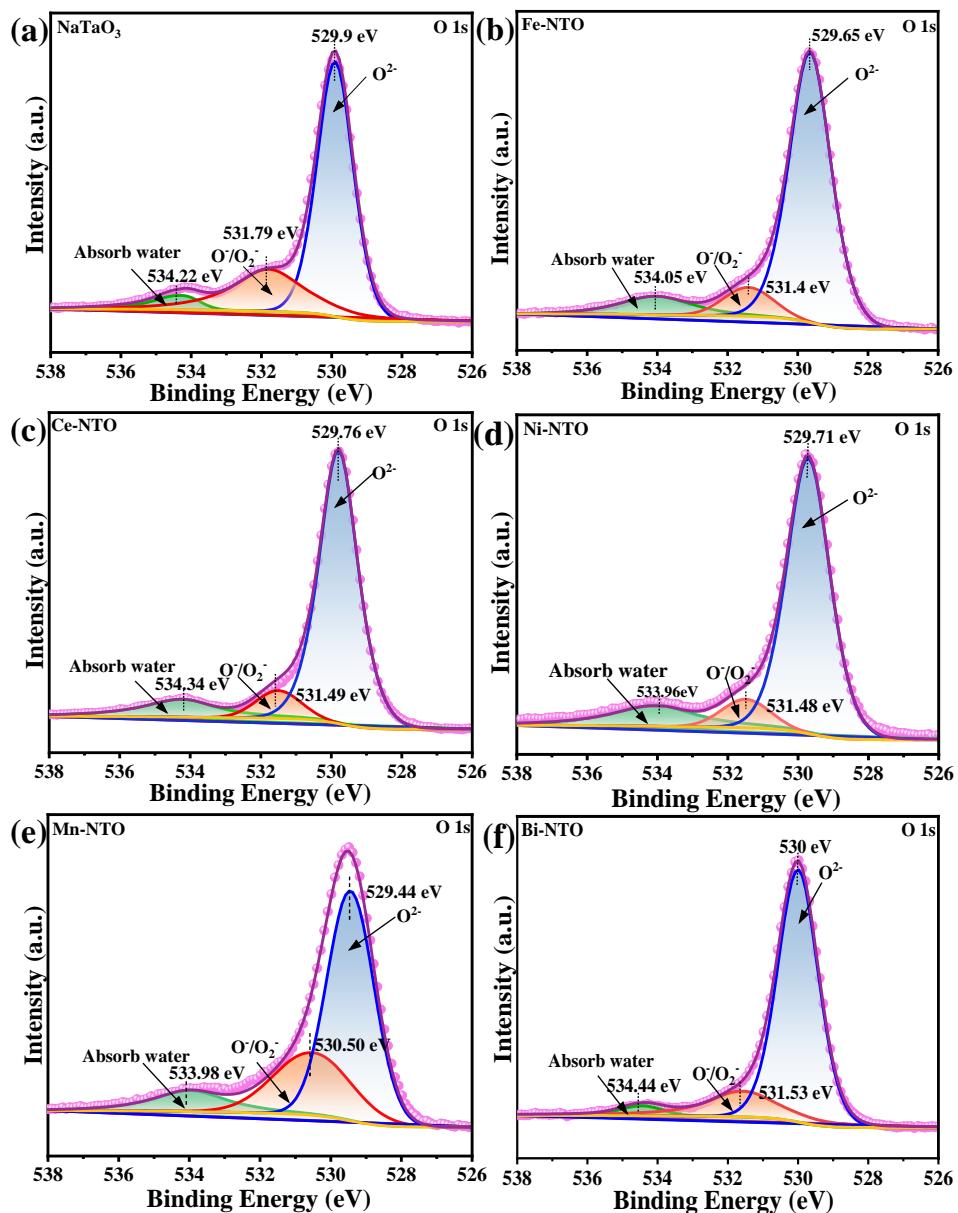
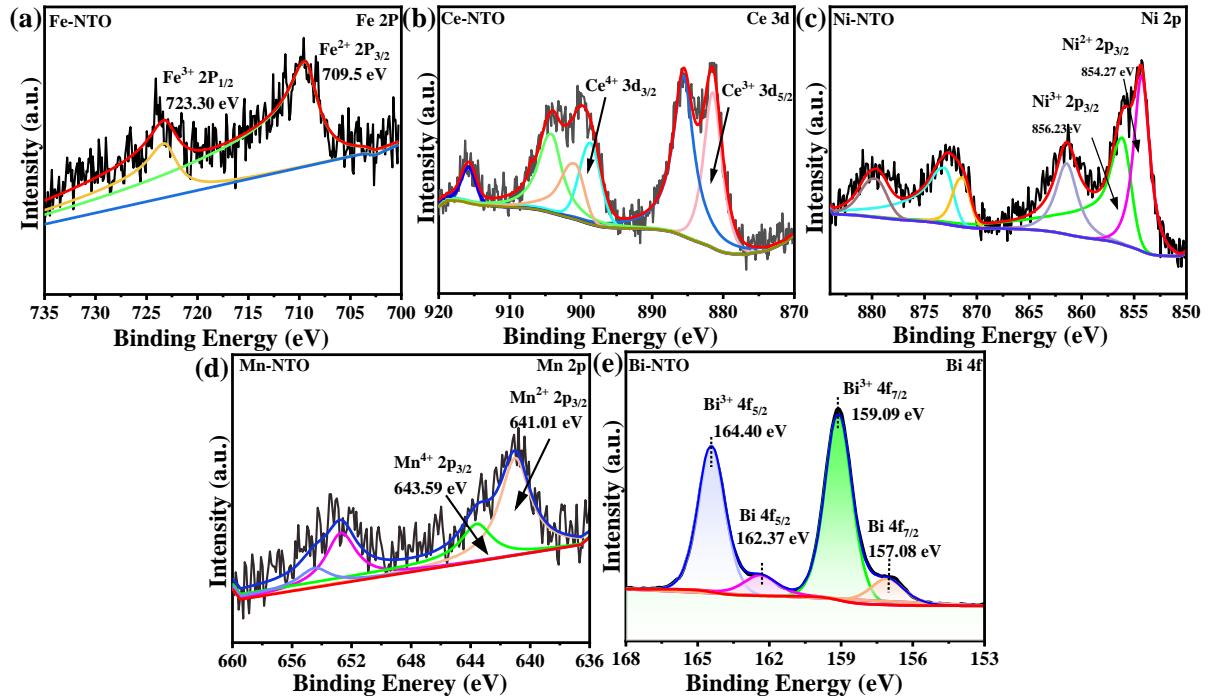
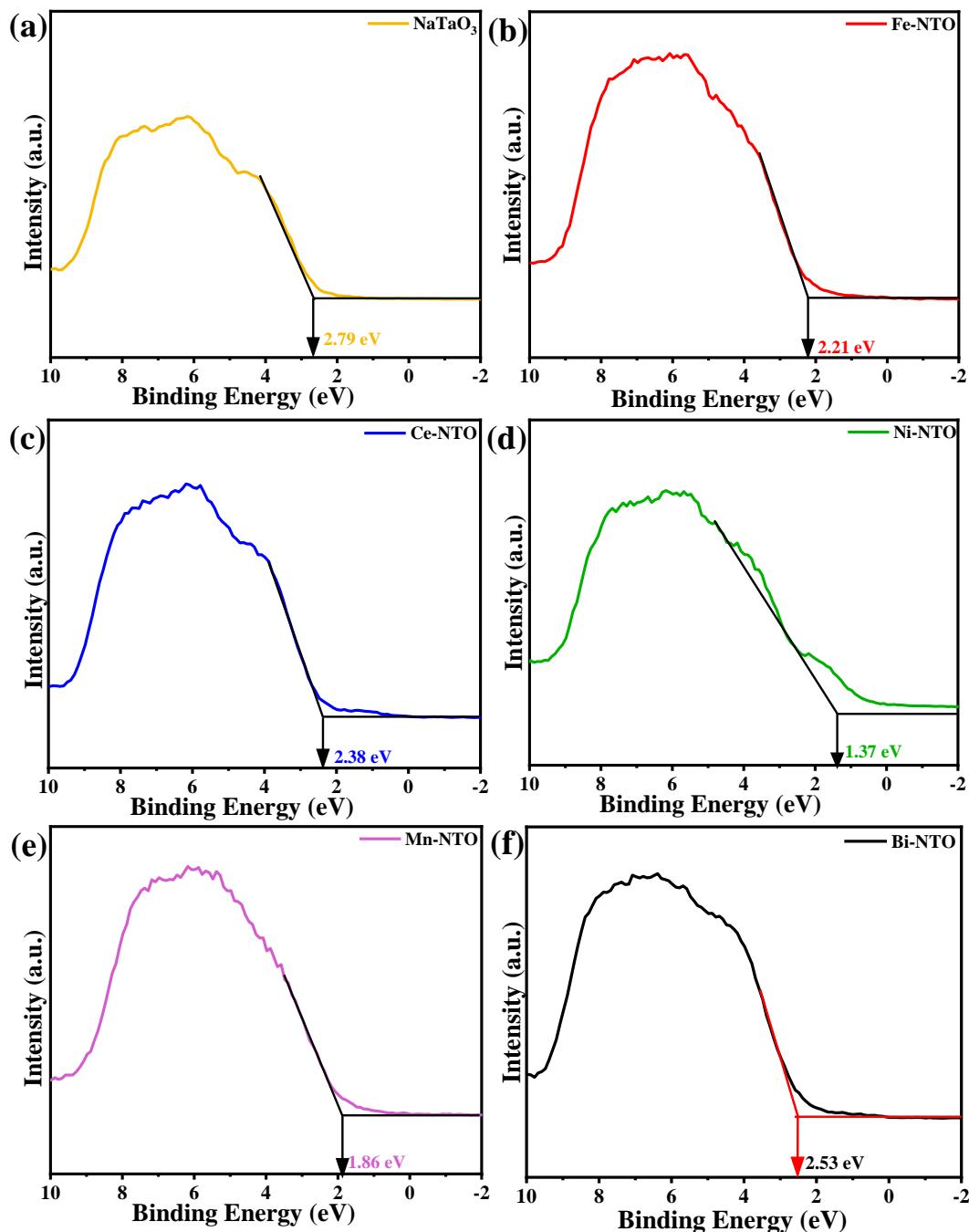


Figure S1. O 1s profiles of (a-f)  $\text{NaTaO}_3$  and M- $\text{NaTaO}_3$  (M = Fe, Ce, Ni, Mn, Bi) series catalysts.

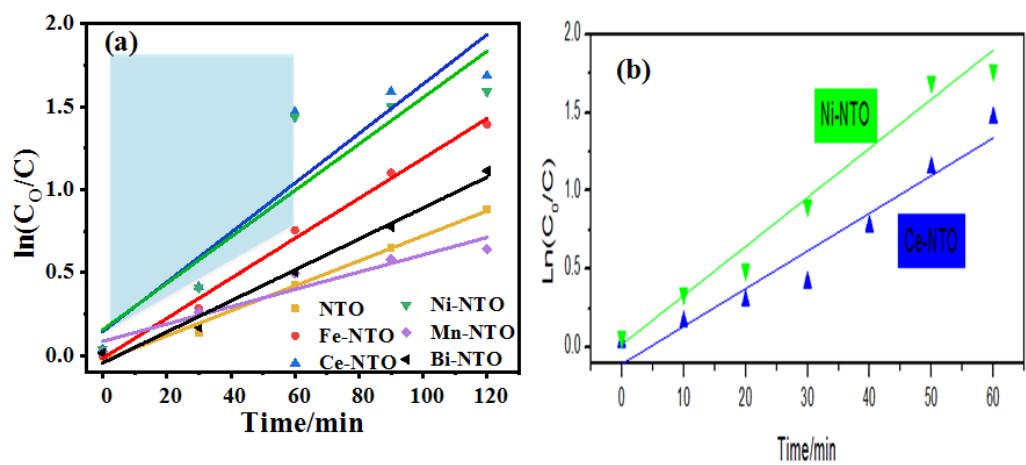
Figure S2 shows the high-resolution XPS spectra of Fe 2p, Ce 3d, Ni 2p, Mn 2p and Bi 4f. After XPS peak fitting, it can be found that Fe-doped NTO exists in the catalyst material in the form of  $\text{Fe}^{2+}/\text{Fe}^{3+}$ . Ce doped NTO Ce exists in the catalyst material in the form of  $\text{Ce}^{3+}/\text{Ce}^{4+}$ . In NTO, Ni exists in the catalyst material in the form of  $\text{Ni}^{2+}/\text{Ni}^{3+}$ . Mn doped NTO exists in the catalyst material in the form of  $\text{Mn}^{2+}/\text{Mn}^{4+}$ . In Bi-doped NTO, Bi exists in the catalyst material in the form of  $\text{Bi}^{3+}$  and metallic Bi.



**Figure S2.** High-resolution XPS patterns of Fe 2p, Ce 3d, Ni 2p, Mn 2p, Bi 4f of catalysts.



**Figure S3.** (a–f) VB XPS spectrum of the catalysts.



**Figure S4.** Photocatalytic degradation ARS kinetics.**(a)** all sample within 120 min,  
**(b)** Ce-NTO and Ni-NTO within 60 min.